

REMARKS

The Office Action dated July 25, 2007 has been received and carefully noted. The above amendments to the claims, and the following remarks, are submitted as a full and complete response thereto.

Applicants are grateful for the indication that claims 5-7 and 12-14 contain allowable subject matter, and would be allowable if amended to be in independent form. Accordingly, claims 5-7 and 12-14 are rewritten in independent form including the base claim from which they depend. Thus, it is respectfully submitted that claims 5-7 and 12-14 are reconditioned for allowance.

Claims 1-14 are pending and under consideration.

REJECTION UNDER 35 U.S.C. § 103:

In the Office Action, at page 3, claims 1-4 were once again rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,385,331 to Harakawa et al. (“Harakawa”) in view of U.S. Patent No. 6,553,281 to Liu (“Liu”). The Office Action took the position that Harakawa and Liu disclose all the aspects of independent claim 1 and related dependent claims 2-4. In particular, the Office Action contended that Harakawa describes all the recitations of independent claim 1 except for detecting the direction in which the human being is pointing based upon the head position. Accordingly, the Office Action relied on Liu as curing the deficiencies of Harakawa. Applicant respectfully traverses this rejection for the following reasons.

Independent claim 1, upon which claims 2-12 are dependent, recites a pointing position detection device which detects the presence of a human being from an image which is photographed by a plurality of cameras, and which detects a position at which the human being is pointing. The pointing position detection device includes a section which detects a head position of the human being, including at least distance information, based upon the image, and a section which detects a hand position of the human being, including at least distance information, based upon the image. The pointing position detection device also includes a section which calculates a position of a hand tip and a main axis of the hand, based upon the hand position which has been detected, and a section which detects a direction in which the human being is pointing, based upon the head position which has been detected and the position of the hand tip and the main axis of the hand which have been calculated. The position at which the human being is pointing is detected, based upon the detected direction in which the human being is pointing.

As will be discussed below, Harakawa and Liu fail to disclose or suggest the elements of any of the presently pending claims.

Harakawa generally describes a hand pointing device. A person is picked up by a video camera, whereby the position or direction pointed to by the person is determined. For example, the tip of the hand, the finger or the like of the person to be recognized or the point corresponding to the tip or the like of a pointer held by the person to be recognized can be used as the feature point. See column 11, lines 20-24. Harakawa also

provides determining three-dimensional coordinates of the feature point whose position is changed when the person to be recognized bends or extends an arm and the three-dimensional coordinates of a reference point whose position is not changed even if the person to be recognized bends or extends an arm. See column 10, lines 58-63. For example, a point corresponding to the body (such as the chest and the shoulder joint) of the person to be recognized can be used as the reference point. See column 11, lines 24-27. The position or direction pointed to by the person to be recognized is determined from the positional relationship between the reference point and the feature point.

In response to the arguments presented in the Response filed on June 19, 2007, the following is submitted on page 2 of the present Office Action:

Harakawa teaches that the fingertip or the like is generally merely moved along a virtual spherical surface centered and the vicinity of the shoulder joint (column 10, lines 30-46). Therefore the vector in 3D space being used here is the radius from the shoulder or chosen reference point [to] the tip of the hand. This radius is interpreted as the main axis of the hand, as it is used to measure movement and direction of the fingertip and the direction in which the person is pointing.

However, Applicant respectfully submits that the main axis of the hand to be the radius from the shoulder to the tip of the hand is being erroneously construed. By definition, axis is a straight line about which a body or geometric object rotates or may be conceived to rotate. (American Heritage Dictionary of the English Language, Fourth edition, 2000, page 126, attached herewith.) Accordingly, the main axis of the hand cannot be from the shoulder to the tip of the hand. Rather, as shown in FIG. 11C of the

present application, the main axis of hand is a straight line (shown in FIG. 11C by the reference symbol L) along the direction in which the hand is pointing.

Harakawa does not teach or suggest, at least, “a section which detects a direction in which the human being is pointing, based upon the head position which has been detected and the position of the hand tip and the main axis of the hand which have been calculated,” as recited in independent claim 1. Although Harakawa provides that the three-dimensional coordinates of the feature point and a reference point and lattice points extracted from an image (See column 21, line 31, to column 22, line 9) are determined, Harakawa is devoid of any teaching or suggestion that the direction in which the human being is pointing is based upon the determination of that main axis of the hand.

Furthermore, Liu does not cure the deficiencies of Harakawa. Instead, Liu simply provides that to estimate a fixation point 3 of an object viewed by a person 2 **on an image screen 1 of a work station computer**, the fixation point 3 being understood to be the point on the image screen 1 impinged by the gaze line 4 of an eye 5 of the person 2, there is provided an eye reference point detection device equipped with an eye reference point detector 6. (Emphasis added). See column 3, lines 40-60. By means of the eye reference point detector 6 it is possible, within a predetermined spatial range, to monitor, and store as image data in a head image storage 7, for instance the head and shoulder portion of the person 2. The head image storage 7 is connected to a surface eye reference point determining unit 8 of the eye reference point detection device which serves to define an eye reference point from the image data of the head image storage 7.

As can be clearly appreciated from the description provided in Harakawa, this reference is also silent as to teaching or suggesting that the direction in which the human being is pointing is based upon the determination of that main axis of the hand. Liu explicitly focuses on detecting a fixation point on a computer screen. A determination of the main axis of the hand does not appear to be needed in Liu to achieve its intended purpose. Accordingly, Applicant respectfully requests that the rejection be withdrawn.

In addition, a person of ordinary skill would not be motivated to combine the descriptions of both, Harakawa and Liu. MPEP 2143.01(V) states “THE PROPOSED MODIFICATION CANNOT RENDER THE PRIOR ART UNSATISFACTORY FOR ITS INTENDED PURPOSE,” (Capital letters in original.) and explains that “If proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification.” Moreover, MPEP 2145(III) states that “the claimed combination cannot change the principle of operation of the primary reference or render the reference inoperable for its intended purpose.” The proposed combination would change the fundamental principles of Williams’ operation, and, thus, is *per se* non-obvious under MPEP 2143.01(V).

Specifically, Harakawa’s configuration appears to provide a hand pointing apparatus for determining a position or a direction pointed to by a person to be recognized. Liu, in contrast, appears to provide an eye detector to estimate a fixation point of an object viewed by a person on an image screen of a work station computer. A

person of ordinary skill in the art would not have been motivated to combine the descriptions of Harakawa and Liu as both references provide a completely different configuration and purpose. Accordingly, Harakawa's description cannot be taken as providing a motivation, teaching, or suggestion to include the description of Liu to provide the claimed pointing position detection device, and respectfully request that the rejection be withdrawn.

Arguments submitting lack of motivation to combine the descriptions of Harakawa and Liu were also presented in the Response filed on June 19, 2007. However, the Office Action failed to address this ground of traversal. MPEP 707.07(f) sets forth the examiner's obligation to answer all material traversed. Specifically MPEP 707.07(f) states that "the examiner should, if he or she repeats the rejection, take note of the applicant's argument and answer the substance of it." It is essential that the Office Action address each of the arguments presented, so that meaningful appellate review is possible. If the arguments are unanswerable, the rejection should be withdrawn. Accordingly, Applicant respectfully request that the rejection be withdrawn for this additional reason.

Because in the presently claimed invention the position which is being pointed to be detected based upon the main axis of the hand, it becomes possible to detect the position which is being pointed with high accuracy, even if the arm is bent. A combination of Harakawa and Liu fails to disclose or suggest all of the elements of any of the presently pending claims, and, thus, fails to provide these critical and non-obvious advantages.

Accordingly, Applicant respectfully request that independent claim 1 and related dependent claims 2-4 be allowed.

In the Office Action, at page 5, claims 8-11 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Harakawa, Liu, and well known prior art. The Office Action took the position that “it is well known in the image processing art to use robots for image detection purposes (Official Notice). It would have been obvious to embody the Harakawa and Liu disclosures on a well-known robot in order to make for a completely automated device.”

In response, Applicant respectfully traverse this rejection and incorporate the arguments previously set forth supporting the patentability of independent claim 1 and related dependent claims. It is respectfully submitted that if the examiner wishes to maintain an Official Notice that the features of claims 8-11 are notoriously well known, the examiner must provide supporting evidence. The Federal Circuit has cautioned that an examiner must show reasons that the skilled artisan, confronted with the same problems as the inventor and with no knowledge of the claimed invention, would select the elements from the cited prior art references for combination in the manner claimed. *In re Rouffet*, 47 USPQ2d 1453, 1458 (Fed. Cir. 1998). However, as noted in MPEP §2144.03, while “Official Notice” may be relied upon, these circumstances should be rare when an application is under final rejection or action under 37 CFR §1.113.

Furthermore, Applicant respectfully submit that “to support the conclusion that the claimed combination is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed combination. It is to be noted that simplicity and hindsight are not proper criteria for resolving the issue of obviousness.” *Ex Parte Clapp*, 227 USPQ 972, 973 (B.P.A.I. 1985). No such showing has been made in the present Office Action. Applicant respectfully submit that the reason why no such showing was made is because Harakawa and Liu fail to teach, suggest, or otherwise provide the motivation needed to make such modification. Accordingly, Applicant respectfully request that either evidence be presented supporting the Office Action’s contentions or the claims be allowed.

CONCLUSION:

In view of the above, Applicant respectfully submits that the claimed invention recites subject matter which is neither disclosed nor suggested in the cited prior art. Applicant further submits that the subject matter is more than sufficient to render the claimed invention unobvious to a person of skill in the art. Applicant therefore respectfully requests that each of claims 1-4 and 8-11 be found allowable and, along with allowed claims 5-7 and 12-14, this application passed to issue.

If for any reason the Examiner determines that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact, by

telephone, the applicant's undersigned attorney at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

In the event this paper is not being timely filed, the Applicant respectfully petitions for an appropriate extension of time.

Any fees for such an extension together with any additional fees may be charged to Counsel's Deposit Account 50-2222.

Respectfully submitted,



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Enclosures: Additional Claim Fee Transmittal
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